

REMARKS

The examiner withdrew the objection to the abstract and the rejection of claim 16 under 35 U.S.C. 112, second paragraph.

The examiner maintained the rejection of claims 1-4, 7-15 and 17-20 under 35 U.S.C. 102(b) as being anticipated by Hasunuma et al. (Development of Teleportation Master System with a Kinesthetic Sensation of Presence, 1999).

The examiner also indicated that he withdrew the rejection of claims 5 and 16 under 35 U.S.C. 103(a) as being unpatentable over Hasunuma et al. However, at the end of the reply the rejection was maintained and therefore has been rebutted again by Applicant.

35 U.S.C § 102

The examiner rejected Claims 1-4, 7-15 and 17-20 under 35 U.S.C. 102(b), as being anticipated by Hasunuma et al. {Development of Teleportation Master System with a Kinesthetic Sensation of Presence, 1999}.

The examiner stated:

As per claims 1 and 13, Hasunuma et al., teaches a teleportation system and an associated method having a virtual reality encounter system comprising (see figs. 1 and 2), motion sensors positioned on a human user (see figs. 1 and 2, wherein operator being taken as human user), the motion sensors sending motion signals corresponding to movements of the user as detected by the motion sensors relative to a reference point the motion signals over a communications network (see figs. 1 and 2); and a humanoid robot (see figs. 1 and 2), receiving, from the communications network (see figs. 1 and 2), the motion signals to induce movement of the robot according to movement of the human user (see figs. 1 and 2); with respect to claim 13, sending motion signals from motion sensors positioned on a human user (see figs. 1 and 2), the motion signals corresponding to movements of the human user (see section 1, first paragraph, wherein human user being considered as operator, as noted above) as detected by the motion sensors relative to a reference point (see figs. 1 and 2). Note: The entire concept of this application has been embedded into Hasunuma's et al. publication. See entire publication.

Applicant's claim 1 is distinct over Hasunuma.

Claim 1 is directed to "A virtual reality encounter system" which features: motion sensors positioned on a human user, the motion sensors sending motion signals corresponding to movements of the user as detected by the motion sensors relative to a reference point the motion

signals over a communications network, a set of goggles worn by the user, the goggles including a display to render video signals received from a camera; and a humanoid robot, receiving, from the communications network, the motion signals ... the humanoid robot further comprising at least one camera coupled to humanoid robot, the camera for sending video signals to the communications network for reception by the set of goggles.

Hasunuma neither describes nor suggests these features. It is noted that the examiner relies heavily on Fig. 1 and Fig. 2 in Hasunuma in rejecting Applicant's claim 1 without specifically pointing out where in the context of the paper these features have been described. However, both figures in the applied art (reproduced below) along with respective relevant descriptions, merely show the platform and general configuration of a teleoperation master system.

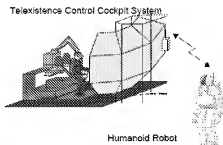


Figure 1. Advanced remote control humanoid robot platform

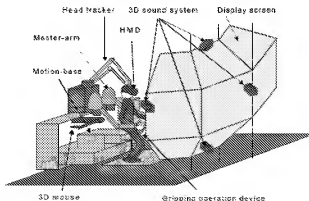


Figure 2. Configuration of teleexistence control cockpit system

In particular, Hasunuma does not describe "motion sensors positioned on a human user, the motion sensors sending motion signals corresponding to movements of the user as detected by the motion sensors relative to a reference point the motion signals over a communications network." In contrast, Hasunuma states explicitly on page 2 that:

When travelling, an operator sends a command by using a display screen with the 3D mouse as a command input device; surrounding scenery from the robot is displayed on the other screens with some auxiliary information, and kinesthetic sensation is displayed by moving the motion-base. When working on a dexterous task with arms, an operator manipulates by using master-arms and gripping operation devices, watching views on the HMD from robot eye cameras; kinesthetic sensation of inclination of robot upper body is displayed with the motion-base, and force and torque at wrists of robot and gripping force can be fed back to the operator through the master-arms and the gripping operation devices.

In use of the teleoperation master system, an operator leans on a seat of the motion-base and pushes his hands in attachments of the master-arms and the gripping operation devices. Then, through the master-arm and the gripping operation device, the operator can remotely manipulate the robot arms and hands. The motion-base can display vibration, shock, and acceleration acting on the robot and upper body's inclination to the operator.

As such, Hasunuma requires construction of and use of a master-arm and a gripping device to manipulate the robot arms and hands remotely. The rest of the paper in Hasunuma is mainly focused on how to construct the master-arm and gripping device with similar joint arrangement of human arms. More specifically, on page 3, second column, paragraph 2, Hasunuma teaches:

The elbow angle is derived from a moving direction of an operator's art which is measured by sensors on the master-art. Several optical sensor are located on a lower link of the mater-arm. By using information from the sensors, the elbow angle is controlled so that it roughly keeps a relative distance between a human operator's arm and the master-arm. (emphasis added)

It becomes self-evident that Hasunuma places sensors on a mechanical component, namely, a master-arm, to control the elbow angle between a human operator and the mechanical component. Upon obtaining the elbow angle information, Hasunuma then generates an input command for a slave-arm. Because the motions sensors are not positioned on a human user in Hasunuma, Applicant's claim 1 is distinct over Hasunuma and allowable.

Claim 13 drawn to the method analogue of claim 1, is allowable for at least the reasons given for claim 1.

Claim 2

Claim 2 limits claim 1 and requires that: "the robot includes actuators corresponding to the motion sensors, the actuators causing the robot to move."

The examiner argues that:

As per claim 2 and 14, Hasunuma et al., teaches a teleoperation system and an associated method wherein the robot includes actuators corresponding to the motion sensors, the actuators causing the robot to move (see fig. 1 and 2, particularly the humanoid which contains motion sensors, actuator etc.).

Figs 1 and 2 neither describe nor suggest the element of claim 2. However, on page 3, second column, paragraph 2, Hasunuma states:

We implemented seven actuators for seven joints of the master-arm for force feedback in this case, we control six of them to perform force feedback control to a human operator, and the other to adjust elbow angle.

As such, Hasunuma is understood to use six actuators to send feedback from a robot to a human operator. However, this teaching is the opposite of what is claimed in Applicant's claim 2, and therefore Hasunuma teaches away from that feature. Furthermore, Hasunuma uses the only left one actuator out of total seven actuators to adjust the elbow angle between a human operator and a master-arm. It appears that none of the actuators is positioned on the robot itself to be responsive to motion sensors. Therefore, Claim 2 is distinct and allowable over the art.

Claims 3-4 and 6-13 are allowable at least for the reasons discussed in claim 1.

Claims 14, 15 and 17-20 are allowable for the reason that these claims depend from claim 13.

35 U.S.C §103

The examiner rejected Claims 5 and 16 under 35 U.S.C. 103(a) as being unpatentable over Hasunuma et al.

The examiner stated:

As per claim 5, Hasunuma et al., teaches essential features of the invention substantially as claimed with the exception of a second humanoid robot in the second location, and a second set of goggles to receive the video signals; and with respect to claim 16, a second mannequin.

However, it would have been obvious to modify Hasunuma et al. teachings by using more than one robot/mannequin, that would require more than one goggle to receive video signals or any signals, because modification would have been a desire feature into Hasunuma et al. teachings in order to improve the usability and the functionability (sic) of system as a whole.

Claim 5 is neither described nor suggested by Hasunuma. Claim 5 is directed to a virtual encounter with two users and robots. Specifically, claim 5 limits the system of claim 4 by specifying the robot of claim 4 is at a first location and the set of goggles of claim 4 is at a second location. Claim 5 adds the feature of: "... a second humanoid robot in the second location, the second humanoid robot having a second microphone and a second camera for sending audio and video signals over the communication network ... a second set of goggles worn by a second user at the first location to receive the video signals from the first camera ... and a second earphone worn by the second user ... to receive the audio signals from the first microphone...

The examiner acknowledges that Hasunuma does not teach the second humanoid robot and second set of goggles. Nevertheless, the examiner argues that: "it would have been obvious to modify Hasunuma et al. teachings by using more than one robot/mannequin, that would require more than one goggle to receive video signals or any signals, because modification would have been a desire feature into Hasunuma et al. teachings in order to improve the usability and the functionability of system as a whole." Applicant disagrees.

Hasunuma is directed to a virtual robot platform for cockpit systems. In particular, Hasunuma describes that:

The platform consists of a virtual robot platform, three actual humanoid robots, and three telexistence control cockpit systems to operate each humanoid robot. A set of a humanoid robot and a telexistence control cockpit system can form an advanced remote control humanoid robot platform; an image of the platform is shown in Figure 1.

Thus, clearly Hasunuma contemplates more than one robot. However, what is neither described nor suggested by Hasunuma is that the robot (of claims 4 and 1) is at a first location and the set of goggles (of claims 4 and 1) is at a second location and the system includes a second humanoid robot in the second location ... and a second set of goggles worn by a second

user at the first location ... and a second earphone worn by the second user at the first location

...

Hasunuma does not suggest two locations with a robot and user in each of those locations. Hasunuma would provide the users in one location and the robots in different locations. No mention is made of a user/robot pairing. Because, Hasunuma is not directed to a virtual encounter in which the robots are proxies for the humans it would not be apparent why one would Hasunuma to modify to provide two users at two different locations controlling two robots at the two different locations. Such a modification only results from an improper application of hindsight using applicant's invention as a guide.

Accordingly, claim 5 is allowable over Hasunuma.

In Response to Applicant's prior arguments, the examiner stated with respect to claim 5 that:

As to the reference not teaching "a second humanoid robot and a second set of goggles" Examiner maintain his position by stating: it would have been obvious to modify Hasunuma et al. teachings by using more than one robot/mannequin, that would require more than one goggle to receive video signals or any signals, because modification would have been a desire feature into Hasunuma et al. teachings in order to improve the usability and the functionability of system as a whole, as seen above.

Applicant points out that Hasunuma already discloses two robots, but does not disclose two robots in two different locations, controlled by two users each respectively in one of the two different locations. Accordingly the suggestion to modify is not present.

Claim 16 is allowable over Hasunuma for analogous reasons as those given for claim 5.

All of the dependent claims are patentable for at least the reasons for which the claims on which they depend are patentable.

Any circumstance in which the Applicant has (a) addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner, (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims, or (c) amended or canceled a claim does not mean that the applicant concedes any of the examiner's positions with respect to that claim or other claims.

In view of the foregoing, Applicant respectfully requests entry of the amendment since it addresses specific objections first raised by the examiner in the instant office action, does not require any further consideration or search. Accordingly, Applicant submits that the application is in condition for allowance and such action is respectfully requested at the examiner's earliest convenience.

This Reply is accompanied by a Notice of Appeal.

Please charge the Petition for Extension of Time fee of \$230 and please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: May 1, 2008

/Denis G. Maloney/
Denis G. Maloney
Reg. No. 29,670

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906